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EXAMINER

PHAM, HOAI V

ART UNIT PAPER NUMBER

2814

DATE MAILED: 03/27/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/063,331

Applicant(s)

FRIED ET AL.

Examiner

Hoai V Pham

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED. (35 U.S.C. § 133)
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 January 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) 13-19 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s) _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2 6) ☐ Other:

DETAILED ACTION

Election/Restrictions

1. Applicant's election without traverse of claims 1-12 in Paper No. 4 is acknowledged.

Drawings

2. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the limitation in claims 2, 8 and 10 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.
3. A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Specification

4. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

Claim Objections

5. A claim 9 is objected to because of the following informalities: claim 9 can not depend on itself. Appropriate correction is required.

Claim Rejections - 35 USC § 112

6. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

7. Claims 2, 3, 8 and 10-12 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claim 2, the phrase "at least one first interconnect disposed adjacent one of the top surface, the first side surface, and the second side surface of the at least one Fin structure" is not described in the specification and the figure.

Claim 3, the phrase "at least one second interconnect disposed adjacent the at least one conductor structure" is not described in the specification and the figure.

Claim 8, the phrase "a FinFET is disposed on the substrate, the FinFET having a gate electrode coupled to said conductor structure" is not described in the specification and the figure.

Claim 10, lines 13-14, the phrase "the second conductor structure partially overlays is within a thickness of the second Fin structure" is not described in the specification and the figure.

8. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

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9. Claims 1-12 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1, lines 4-6, "the at least one Fin structure" renders the claim indefinite. It not clear where "the at least one Fin structure" comes from.

Claim 1, line 5, "the at least one insulator structure" renders the claim indefinite. It not clear where "the at least one insulator structure" comes from.

Claims 2, lines 2-3, "the at least one Fin structure" renders the claim indefinite. It not clear where "the at least one Fin structure" comes from.

Claims 3-4, "the at least one conductor structure" renders the claim indefinite. It not clear where "the at least one Fin structure" comes from.

Claim 5, "the at least one single-crystal Fin structure" and "the at least one conductor structure" render the claim indefinite. It not clear where "the at least one single-crystal Fin structure" and "the at least one conductor structure" come from.

Claim 5, "the at least one conductor structure partially at least one Fin structure" render the claim indefinite. It not clear what "partially at least one Fin structure" means.

Claim 6, "the at least one single-crystal Fin structure" and "the at least one insulator structure" render the claim indefinite. It not clear where "the at least one single-crystal Fin structure" and "the at least one insulator structure" come from.

Claim 7, "first single-crystal Fin structure" renders the claim indefinite. It not clear where "first single-crystal Fin structure" comes from.

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Claim 10, lines 5-6, "each having a top surface and a first side surface opposite a second side surface" renders the claim indefinite. It not clear that "each refers to what element --first single-crystal Fin structure or second single-crystal Fin structure.

Claim Rejections - 35 USC § 102

10. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

11. Claims 1-8, as best understood, are rejected under 35 U.S.C. 102(b) as being anticipated by Hanagasaki [U.S. Pat. 5,869,859].

Hanagasaki (figs. 1-2, cols. 4-8) discloses a capacitor formed on a substrate (1), comprising:

a single-crystal Fin structure (5a) having a top surface and a first side surface opposite a second side surface;

an insulator structure (6a, 7b) adjacent the top surface of the single-crystal Fin structure; and

a conductor structure (8b) adjacent the insulator structure over a portion of the single-crystal Fin structure.

With respect to claim 2, Hanagasaki discloses that at least one first interconnect (11) disposed adjacent one of the top surface, the first side surface, and the second side surface of the single-crystal Fin structure (fig. 1).

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With respect to claim 3, Hanagasaki discloses that at least one second interconnect (11) disposed adjacent the conductor structure (fig. 1).

With respect to claim 4, Hanagasaki discloses that the conductor structure (8b) is selected from the group consisting of a metal, a metal silicide, and doped polysilicon (col. 7, lines 27-38.

With respect to claim 5, Hanagasaki discloses that the single-crystal Fin structure has a given width, and wherein the conductor structure partially over the single-crystal Fin structure.

With respect to claim 6, Hanagasaki discloses that the single-crystal Fin structure is narrow, has a given width and wherein the insulator structure(7b) is adjacent both the first side surface and the second side surface of the single-crystal Fin structure, thereby encapsulating the single-crystal Fin structure .

With respect to claim 7, Hanagasaki discloses that the single-crystal Fin structure has conductivity enhancing dopant ions therein (col. 6, lines 15-25).

With respect to claim 8, Hanagasaki discloses that a FinFET (8a) is disposed on the substrate, the FinFET having a gate electrode coupled to said conductor structure (fig. 1).

12. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the

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applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

13. Claims 10-11, as best understood, are rejected under 35 U.S.C. 102(e) as being anticipated by Ohyu et al. [U.S. Pat. 6,291,847].

Ohyu et al. (fig. 4, cols. 9-15) discloses an integrated circuit chip comprising at least one first nominal-voltage decoupling capacitor (20, 21, 22) and at least one second high-voltage decoupling capacitor (20r, 21, 22), respectively comprising:

a first single-crystal Fin structure (20) having a first width and second single-crystal Fin structure (20r) having a second width greater than said first width, each of the first single-crystal Fin structure and the second single-crystal Fin structure having a top surface and a first side surface opposite a second side surface;

a first insulator structure (21) adjacent the top surface, the first side surface, and the second side surface of the first Fin structure, thereby encapsulating the first Fin structure, and at least one second insulator (21) structure adjacent the top surface of the second Fin structure; and

a first conductor structure (22) adjacent the first insulator structure over a portion of the first Fin structure, and second conductor structure (22) adjacent the at least one second insulator structure over a portion of the second Fin structure.

With respect to claim 11, Ohyu et al. discloses that the second single-crystal Fin structure has conductivity-enhancing dopant ions therein (col. 11, lines 54-52).

Claim Rejections - 35 USC § 103

14. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

15. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

16. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hanagasaki [U.S. Pat. 5,869,859] as applied to claims 1-8 above, and further in view of Sato et al. [U.S. Pat. 6,309,945].

Hanagasaki discloses all the limitation as claimed above except for the substrate comprises a SOI substrate. However, Sato et al. discloses that the substrate can be used of SOI substrate to prevent strongly coarsening of the porous structure at the high temperature in the epitaxial growth and the substrate bonding operation (col. 3, lines 58—67). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use SOI substrate as taught by Sato et al. into the

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device of Hanagasaki in order to prevent strongly coarsening of the porous structure at the high temperature in the epitaxial growth and the substrate bonding operation and applicable to various high-performance electronic devices.

Conclusion

17. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hoai V Pham whose telephone number is 703-308-6173. The examiner can normally be reached on 6:30A.M. - 6:00P.M..

18. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wael M. Fahmy can be reached on 703-308-4918. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-7722 for regular communications and 703-308-7724 for After Final communications.

19. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

HP
Hoai Pham
March 19, 2003

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